

CLAIMS

1. An overcurrent detection circuit which detects an overcurrent when the overcurrent flows to an output transistor to the input terminal of which a supply voltage is input, to the control terminal of which a control voltage is input, and from the output terminal of which an output current is output, comprising:

a monitor transistor a control terminal and output terminal of which are connected to the control terminal and output terminal respectively of the output transistor;

an output current detection transistor to an input terminal of which a supply voltage is input, to a control terminal of which a detection bias voltage is input, and an output terminal of which is connected to an input terminal of the monitor transistor;

a constant current source that generates a reference current;

a reference transistor to an input terminal of which a supply voltage is input, to a control terminal of which the detection bias voltage is input, and from the output terminal of which the reference current flows to the constant current source; and

a comparison circuit that detects an overcurrent when the overcurrent flows to the output transistor by comparing the voltage of the output terminal of the output current detection transistor and the voltage of the output terminal of the reference transistor, and outputs an overcurrent detection signal.

2. The overcurrent detection circuit according to claim 1, wherein the output transistor, the monitor transistor, the output current detection transistor, and the reference transistor are P-type MOS transistors.

3. The overcurrent detection circuit according to claim 1 or 2, wherein the comparison circuit comprises:

a diode-connected first comparison transistor that is interposed between the constant current source and the reference transistor;

a second constant current source that generates a current that is a predetermined multiple of the reference current generated by the constant current source; and

a second comparison transistor that is interposed between the second constant current source and the output current detection transistor, a control terminal of the second comparison transistor being connected to a control terminal of the first comparison transistor.

4. A regulator comprising the overcurrent detection circuit according to any of claims 1 to 3,

wherein the output transistor is provided between a supply voltage and an output terminal that outputs a predetermined DC voltage,

and

the regulator further comprises a control circuit that controls the output transistor to maintain the predetermined DC voltage by inputting the voltage of the output terminal as feedback and that turns off the output transistor when the overcurrent detection signal of the overcurrent detection circuit is input to the control circuit.